Hansteen's Eclipse at Stiklastad, 1030 August 31.
By P. H. Cowell.

The record states that the eclipse occurred during the battle at Stiklastad at which Olaf the Fat was killed, and the date assigned to the battle is 1030 July 29. There are two reasons for supposing this date to be in error: the narrative mentions a dark night following the battle, whereas on July 29 the sun never sinks as much as 9° below the horizon of Stiklastad; also, Olaf was canonised, and July 29 became his festival and in time the supposed day of his death. Now August 31 was already at that time assigned to another saint. The foregoing arguments are Hansteen's (*Ast. Nach. Ergänzungsheft*, p. 49). Dr Dreyer (*The Observatory*, 1895 October, p. 363), quoting Prof. Konrad Maurer, decides against the later date for the battle. His arguments, as far as they are based on the day of the week, do not appear to me conclusive, as the chronicler may easily have counted backwards. But in any case we have a description of a total eclipse, that it was beyond the power of the chronicler to invent, and the eclipse is stated to have occurred at Stiklastad.

The eclipse has therefore been worked up. Considering its comparatively recent epoch, it might have turned out not to discriminate between the present tables and my formulæ. The very contrary is the case. My formulæ leave 3″ of the northern end of the Sun's diameter uncovered (indicating the possibility of small errors that I am quite prepared to admit). Hansen's tables and the present tables, which are practically the same for the epoch 1030, shift the Moon 35″ further south relatively to the Sun. The low altitude of the Sun makes this correspond to about 100 miles on the Earth's surface.

Outline of Calculations.

$$T = -7 \cdot 69303 = \quad 1030 \ \text{Aug.} \ 31 + 28° \cdot 53 \ \text{G.M.T.}$$

$$g = 286° \ 12' \ 41''\cdot8 \qquad L' = 165° \ 0' \ 9''\cdot8$$
$$\omega = 88 \ 35 \ 37\cdot2 \qquad \pi' = 266 \ 18 \ 7\cdot1$$
$$-\Omega = 207 \ 10 \ 12\cdot3$$

Inequalities of Moon's Longitude :—

A. Solar terms over 20″			−16 752″·7
B.	,,	1·35 −	69·8
C.	,,	0·15 −	5·0
Figure of Earth terms		+	4·9

Moon's Latitude and Sine Parallax :—

A. Solar terms over 10″		+3 089″·5		+3 500″·9
B.	,,	0·55 +	27·0	+ 0·1
C.	,,	0·05 −	1·0	− 0·1
Figure of Earth terms		−	3·9	

Movements in Julian century $\div 10^6$:—

> In geocentric elongation in longitude $1681''\!\cdot 6$
> In geocentric latitude $165\cdot 3$
> Stiklastad $11°\ 35'$ E; $63°\ 38'\!\cdot 8$ geocentric latitude; $1 - \rho$
> $= 0\cdot 00268$
> Parallax in longitude $+ 210''\!\cdot 7$; in latitude $- 3122''\!\cdot 8$

Movements in Julian century $\div 10^6$ as seen from Stiklastad :—

> In elongation in longitude $1480''\!\cdot 3$
> In latitude $44\cdot 5$

Hence if $0\cdot 09\Delta F$, ΔD are the corrections required by the latitude and difference of longitudes, then the latitude at apparent conjunction in longitude is

$$- 8'' + 0\cdot 09\Delta F - 0\cdot 03\Delta D$$

The difference of apparent semi-diameters is about $5''$.

Note on the Approaching Return of Halley's Comet.
By A. C. D. Crommelin.

It is well known that Dr A. J. Ångström published in 1862 a paper entitled "Sur deux inégalités d'une grandeur remarquable dans les apparitions de la comète de Halley" (Actes de la Société royale des Sciences d'Upsal, Sér. III., t. iv.). In this paper he discusses the observed perihelion passages, as determined by Dr Hind, from B.C. 11 to A.D. 1835, and deduces the mean period of the comet, 76·93 years, this period being affected by two large inequalities of amplitudes 1·5 years, 2·3 years, periods 2650 years, 782 years. He has found theoretical arguments which will satisfy these periods, viz. 13 ♂ - 2 ♃, ♃ + ♄ - 9 ♂, where the symbols denote the mean annual motions of comet, Jupiter, Saturn. The amplitudes have been obtained by observation, and in no case does the error in the formula as compared with the observed time of perihelion exceed 1 year; in most cases it is less than half a year. Dr Ångström does not claim that these two are the only inequalities, merely that they are the most important ones.

I do not think it is so generally known that the time of the next perihelion passage, as deduced from Dr Ångström's curve, is altogether different from that published by Count de Pontécoulant. I deduce from the curve 1913·08 for the time of the next passage, whereas that given by Count de Pontécoulant is 1910·37, a discordance of 2·7 years.

We are not, of course, justified in assuming that M. Pontécoulant's